APPENDIX A

PIER SUBJECT AREA FUNDING PROPOSALS

For

Fiscal Year 1999/2000

Strategic Science and Technology

Renewable Energy

Environmental

Environmentally Preferred Advanced Generation

Buildings

Industrial/Agriculture/Water

1999/2000 STRATEGIC AREA FUNDING PROPOSAL

Strategic Science and Tech. Area \$11.6 Million

Targeted and Negotiated Procurements (\$1.8M)

Storage Technologies

Status-in development (\$500K)

• Interconnection Stds.

Status- in review (\$300K)

- Interconnection Hardware Status-in development (\$400K)
- Power Quality Testing Status-in development (\$600K)

Programmatic Procurement (\$5.2M)

• System Reliability Consortia

Status-in review (\$2.4M)

Seismic studies

Status- in review (\$1.8M)

 Distributed Energy Collaborative

Status -in development (\$1M)

Memberships (\$2.6M)

EPRI

Status 6/23 Bus. Mtg

• GRI

Status -6/23 Bus. Mtg

Power Systems
 Engineering
 Research
 Collaborative

Status-delayed/pending staff

Special Opportunity (\$2M)

• CINS Complex Networks Status- in review (\$1M)

Unplanned opportunity

transformer (\$150k)

Status-unknown (\$1M)
superconducting
flywheel (\$120k)
superconducting

Included in Subject Area but not part of Funding Proposal

• SIGP Small Grant program Status-underway (\$2.5M)



1999/2000 RENEWABLE AREA FUNDING PROPOSAL

Renewable Energy Area (\$10.5 million)

Cross Cutting Analytical Tools (\$820k)

- Strategic Value Analysis (Q1)
 Status: Project identified and
 technical assistance WA being
 prepared and team being
 assembled. (\$300k)⁺
- Market Assessments (Q1)
 Status: Assessments identified for each renewable area. Tech assnt WA's being prepared (\$360k)
- Economic/Technical Targeting Tools (Q2) Status: Products still being identified. (est. \$100k)
- Quantification of Benefits from Renewable Electricity (Q2)
 Status: WA being prepared. (est.

Collaborative Agmts or Sole Source Contracts (\$3.6 million)

- Biomass/MSW
 - Byproduct development: lignin testing (\$500k): sole source w/Ogden Energy (Q1)
 - Byproduct development: field demo (\$500k): collaborative with DOE (Q2)
 - Lowering O&M and increasing efficiencies (\$300k): interagency with UC (O2)
- Geothermal
 - Reducing O&M and drilling costs (\$500k) w/DOE (Q2)
- Hydroelectric
 - Advanced turbine designs (\$300k)
 w/DOE and INEEL (Q3)
- Photovoltaics
- Performance evaluation & improvement of grid connected systems (\$100k) w/DOE (Q1)
- Hybrid PV systems (\$200k) w/DOE (Q3)
- Wind
- Development of low cost utility-scale turbines (\$1 million) w/DOE and NREL (Q3)
- Reducing turbine O&M (\$200k) w/DOE and Sandia NL (Q4)

Competitive RFPs (\$5.5 million)

- Biomass/MSW
 - Small Modular Biomass RFP (\$1.0 million) (Q1)
 - Biogas and LGR innovations: (\$500k) (Q2)
- Geothermal
- Development of value added products (\$500k) (Q2)
- Improved performance systems (\$500k) (Q3)
- Hydroelectric
- Lowering the costs of small hydro systems (\$500k) (Q3)
- Photovoltaics
- Thin film module manufacturing (\$1 million) (Q3)
- Reducing BOS costs (\$300k)*
- Solar Thermal Electric
- Improving trough mirror and tube reliability and costs (\$500k) (O2)
- Wind
- Revising California's wind resource estimates (\$400k)(Q3)
- Developing low cost storage (\$300k) (Q3)

Memberships (\$581k)

- EPRI (1999)
- Renewables Target (\$331k) (Q1)
- Wind Forecasting Model: Tailored Collaborative (\$250k) (Q2)



\$60k)

^{*} To be shared with EPAG Area

⁺ May be shared with other PIER areas

1999/2000 ENVIRONMENTAL AREA FUNDING PROPOSAL

ENVIRONMENTAL AREA \$10.6 MILLION

COLLABORATIVES (\$2.0 mil)

 Degraded Water Survey, Clean up, and Development Strategies

TECHNICAL SUPPORT CONTRACT

(\$0.1 mil)

• Electrotechnology Priorities

MEMBERSHIPS (\$1.5 mil)

- Tailored Collaborative on Dry Cooling Technology
- Aquatic Impacts from Intake/ Discharge—316(a)&(b)
- Hydro Facility Watershed Management
- Energy Facilities Water Management
- Energy Facilities
 Multimedia Toxics
 Management
- GCC Emissions Inventory

INTERAGENCY AGREEMENTS (\$4.0 mil)

- NOx Transport/ Central Ca Ozone Study
- Transmission Line R.O.W. Management
- Greenhouse Gas Emissions Estimates

COMPETITIVE RFP (\$2.0 mil)

Electrotechnology Development

SMALL GRANT AWARDS (\$0.5 mil)

- Innovative Concept Support-Phase I
- Innovative Concept Development-Phase II

UNPLANNED OPPORTUNITY (\$0.5 Mil)



1999/2000 Environmentally Preferred Advanced Generation Area Funding Proposal

Environmentally Preferred Advanced Generation Area \$13.5 Million

Targeted Research Using Competitive Negotiation or RFP (\$9.3 million)

- Advanced Turbine Generators
- Microturbine (MT) Demo & Testing (\$500k)
- Targeted MT Development (\$2,000k)
- Combustor Design Tool Development (\$350k)
- Targeted Flexible Midsize Turbine Development (\$1,500k)
- Fuel Cells
- Targeted FC Development (\$2,000k)
- Total FC Power Plant System Performance (\$300k)
- Cross-Cutting and Other EPAG Technologies
- Power Conditioner Unit (\$200k) *
- Targeted MT/FC Hybrid (\$1,500k)
- Targeted Reciprocating Engine (\$1,000k)

Interagency Agrmt or Sole Source Contract (\$3.6 million)

- Advanced Turbine Generators
- Development of Ultra-Low NOx Surface Stabilized Combustor (\$1,000k)
- Fuel Cells (FC)
- Residential-scale FC Demo (\$500k)
- Dynamic Models for FC Systems (\$400k)
- FC Performance Analysis Tools (\$300k)
- Cross-Cutting and Other EPAG Technologies
- Innovative Projects Grants (\$1,000k)
- Program Support
- Long-Term DOE MOU (\$400k)

Memberships or Tech Support (\$0.55 million)

- Cross-Cutting and Other EPAG Technologies
- EPRI Memberships (\$155k) *
- GRI Memberships (\$68k) *
- Program Support
- EPAG Technology Roadmapping (\$330k)



^{*} These projects are being co-funded with at least one other PIER program area. The estimated cost in this table is only the EPAG portion of the total cost.

1999/2000 BUILDINGS AREA FUNDING PROPOSAL

BUILDINGS AREA \$10Million

TARGETED RESEARCH

(Sole Source) (\$1.0 - 1.5M)

ASHRAE

Status- First project identified. Staff developing work authorizations.

ARTI – HVAC

Status-Staff will review project work statements at 9/99 SC meeting before making recommendations on funding levels

• DOE – Building America

Status-Ongoing discussions with DOE to develop EE residential systems designs in CA inland regions

COMPETITIVE SOLICITATIONS

(\$8M)

- 1. Programmatic Solicitation
- RFP 6/99 @ \$6M
- Market Sectors
 - · Large Non-residential
 - Small Non-residential
 - Residential
 - Multi-family
- Responds Across Technologies to Issues, Goals, Objectives Status-
 - RFP release 7/99
 - Proposals due 9/99
- 2. Targeted Solicitation
- Status-Anticipated 1st Quarter 2000 (\$2M)

CIEE Technical
Assistance (\$200k/Yr)

MEMBERSHIPS

(\$.35M)

- EPRI
 - Status-1 TC (\$126k) and 1 Target (\$40k) proposed
- **Lighting Research Center** (LRC) (\$75k) Status- Undergoing staff evaluation
- Gas Research Institute (GRI) Status-1 Target proposed (\$77k)
- Center for the Built Environment (CBE) (\$30k)

Status-

- Staff recommends membership
- Staff developing interagency agreement
- To be presented for Commission approval 7/99



1999/2000 INDUSTRIAL/AG/WATER AREA FUNDING PROPOSAL

INDUSTRIAL/AG/WATER AREA \$15.5, Million

INTERAGENCY AGREEMENTS

Total \$ 7.7 MM

- Cal Poly
 Flexible Irrigation (\$2.5M)
- UC Davis
 Crop Coefficients (\$1.2 M)
- UC Davis
 Food Processing (\$3.5 M)
- CIEE
 Clean-rooms Industry Analysis
 (\$ 0.5M)

PLANNED SOLE SOURCE

(\$ 6.6 M)

Technical Assistance Contract

• SAIC and ADL
Planning studies (\$ 0.4 M)

Request For Qualifications

• Industries of the Future

Crosscutting Technologies (\$ 0.5 M)

Sole Source

- SCE Integrated Agriculture (\$1.9M)
- Water Consortium (MWD/SCE/EPRI) Municipal Water and Waste Water Treatment (\$ 3.8 M)

MEMBERSHIPS

(\$1.6 M)

- EPRI
 Existing Target (\$ 0.5 M)
 New Targets (\$ 0.9 M)
- **GRI**New (\$ 0.2 M)

